

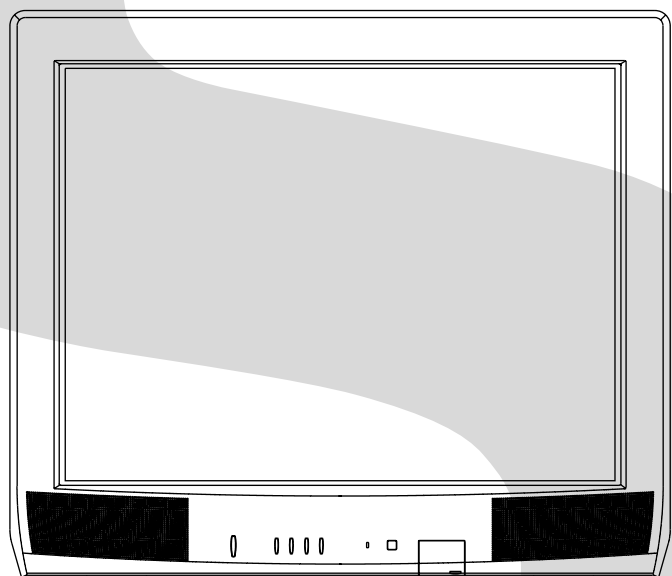
TOSHIBA

FILE NO. 140-200105

SERVICE MANUAL

COLOR TELEVISION

27A41C



SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal [Note 2] should be more than 1M ohm by using the 500V insulation resistance meter [Note 1].
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.

When replacing an IC's or transistors, use only specified silicon grease (YG6260M).

Remove all old silicon before applying new silicon.

GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	27 inch / 676mmV
			CRT Type	Normal
			Deflection	102 degree
			Magnetic Field BV/BH	+0.45G/0.18G
		Color System		NTSC
		Speaker		2Speaker
			Position	Front
			Size	2.0 x 3.5 Inch
			Impedance	8 ohm
		Sound Output	MAX	2.5 + 2.5 W
	10%(Typical)	2.0 + 2.0 W		
		NTSC3.58+4.43 /PAL60Hz		No
G-2	Tuning System	Broadcasting System		US System M
		Tuner and Receive CH	System	1Tuner
			Destination	Others
			Tuning System	F-Synth
			Input Impedance	VHF/UHF 75 ohm
				2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate Frequency	Picture(FP)	45.75MHz
			Sound(FS)	41.25MHz
			FP-FS	4.50MHz
		Preset CH		No
Stereo/Dual TV Sound		Yes		
Tuner Sound Muting		Yes		
G-3	Power	Power Source	AC	120V AC 60Hz
			DC	-
		Power Consumption		at AC
				120 W at AC 120 V 60 Hz
				4 W at AC 120 V 60 Hz
				-- kWh/Year
	Protector	Power Fuse		Yes
G-4	Regulation	Safety		CSA
		Radiation		DOC
		X-Radiation		HWC
G-5	Temperature	Operation		+50C ~ +40oC
		Storage		-20oC ~ +60oC
G-6	Operating Humidity			Less then 80% RH
G-7	On Screen Display	Menu		Yes
		Menu Type		Icon
		Picture		Yes
			Contrast	Yes
			Brightness	Yes
			Color	Yes
			Tint	Yes
			Sharpness	Yes
		Sound		Yes
			Bass	Yes
			Treble	Yes
			Balance	Yes
			BBE On/Off	No
			Stable Sound On/Off	Yes
		Set Up		Yes
			TV/CABLE(CATV)	Yes
			CH Program	Yes
			Add/Erase	Yes
		Option		Yes
			Language	Yes
			V-chip	No
			CH Label	Yes
			Favorite CH	Yes
			Color Stream DVD/DTV	Yes
		Control Level		Yes
			Volume	Yes
			Brightness	Yes
			Contrast	Yes
			Color	Yes
			Tint (NTSC Only)	Yes
			Sharpness	Yes
			Tuning	No
			Bass	Yes
			Treble	Yes
			Balance	Yes
			Back Light	No
			Stereo,Audio Output,SAP	Yes
			Video	Yes
			Color Stream	Yes
			Channel(TV/Cable)	Yes
			CH Label	Yes
			Sleep Timer	Yes
			Sound Mute	Yes
			P-in-P	No
			V-chip Rating	No

GENERAL SPECIFICATIONS

G-8	OSD Language		English	French	Spanish	
G-9	Clock and Timer	OSD Language Setting		English		
		Sleep Timer	Max Time	120 Min		
			Step	10 Min		
		On/Off Timer	Program(On Tim / Off Tim)	No		
		Wake Up Timer		No		
G-10	Remote Control	Timer Back-up (at Power Off Mode) more than		--	Min	Sec
		Unit		RC-DU		
		Glow in Dark Remocon		Yes		
		Format		Toshiba		
		Custom Code		TV:40-BF h		
		Power Source	Voltage(D.C)	3V		
			UM size x pcs	UM-4 x 2 pcs		
		Total Keys		42	Keys	
		Keys	Power	Yes		
			1	Yes		
			2	Yes		
			3	Yes		
			4	Yes		
			5	Yes		
			6	Yes		
			7	Yes		
			8	Yes		
			9	Yes		
			0	Yes		
			100	Yes		
			CH Up	Yes		
			CH Down	Yes		
			Volume Up	Yes		
			Volume Down	Yes		
			TV/Caption/Text	Yes		
			CH1/CH2	Yes		
			TV/Video(TV/AV)	Yes		
			CH RTN/CH ENT(Quick View)	Yes		
			Sleep	Yes		
			RE Call(Call)	Yes		
			Reset	Yes		
			Menu/Enter	Yes		
			Mute	Yes		
			Exit	Yes		
			MTS(Audio Select)	Yes		
			Fav.Up	Yes		
			Fav.Down	Yes		
			Set +		No	
			Set -		No	
			PIP		No	
			Swap		No	
			Locate		No	
			Still		No	
			2 Tuner	PIP CH Up	No	
			P-in-P Only	PIP CH Down	No	
			Multi Brand Keys	CH Up(VCR)	Yes	
				CH Down(VCR)	Yes	
				Pause/Still	Yes	
				TV/VCR(VCR)	Yes	
				Code	Yes	
	FF	Yes				
	Rew	Yes				
	Rec	Yes				
	Play	Yes				
	Stop	Yes				
	TV	Yes				
	VCR	Yes				
	Cable	Yes				

GENERAL SPECIFICATIONS

G-11	Features	Auto Degauss	Yes
		Auto Shut Off	Yes
		Canal+	No
		CATV	Yes
		Anti-theft	No
		Rental	No
		Memory(Last CH)	Yes
		Memory(Last Volume)	Yes
		V-Chip	No
		Type	USA, Toshiba Type
		BBE	No
		Auto Search	No
		CH Allocation	No
		SAP	Yes
		Channel Lock	No
		Just Clock Function	No
		Game Position	No
		CH Label	Yes
		VM Circuit	No
		Full OSD	No
		Premiere	No
		Comb Filter	Yes
			2 Lines
		Auto CH Memory	Yes
		Hotel Lock	No
		Closed Caption	Yes
		Stable Sound	Yes
		FBT Leak Test Protect	Yes
		Favorite CH	Yes
		1 Tuner P-in-P	No
		2 Tuner P-in-P	No
G-12	Accessories	Owner's Manual	Language
			W/ Warranty
		Remote Control Unit	Yes
		Rod Antenna	No
			Poles
			Terminal
		Loop Antenna	No
			Terminal
		U/V Mixer	No
		DC Car Cord (Center+)	No
		Guarantee Card	No
		Warning Sheet	No
		Circuit Diagram	No
		Antenna Change Plug	No
		Service Station List	Yes
		Important Safety Instruction	Yes
		Dew/AHC Caution Sheet	No
		AC Plug Adapter	No
		Quick Set-up Sheet	No
		Battery	Yes
			UM size x pcs
			OEM Brand
			UM4 size x 2
		AC Cord	No
		AV Cord (2Pin-1Pin)	No
		Registration Card (NDL Card)	Yes
		ESP Card	No
		PTB Sheet	No
		300 ohm to 75 ohm Antenna Adapter	No
		Envelop	Yes

GENERAL SPECIFICATIONS

G-13	Interface	Switch	Front	Power	Yes	
				System Select	No	
				Main Power SW	No	
				Sub Power	No	
				Channel Up	Yes	
				Channel Down	Yes	
				Volume Up	Yes	
				Volume Down	Yes	
			Rear	AC/DC	No	
				TV/CATV Selector	No	
				Degauss	No	
				Main Power SW	No	
			Indicator	Power	Yes	
				Stand-by	No	
				On Timer	No	
			Terminals	Front	Video Input	RCA
		Audio Input			RCA x 2	
		Other Terminal			No	
		Rear		Video Input(Rear1)	RCA	
				Video Input(Rear2)	RCA	
				Audio Input(Rear1)	RCA x 2	
				Audio Input(Rear2)	RCA x 2	
				Video Output	RCA	
				Audio Output	RCA x 2	
				S- Input	Yes	
				Euro Scart	No	
				Color Stream	RCA x 3	
				Diversity	No	
				Ext Speaker	No	
				DC Jack 12V(Center +)	No	
				VHF/UHF Antenna Input	F Type	
		AC Outlet	No			

G-14	Set Size	Approx. W x D x H (mm)	650 x 500.5 x 560
G-15	Weight	Net (Approx.)	35kg (77.1 lbs)
		Gross (Approx.)	38Kg (83.7 lbs)

G-16	Carton	Master Carton		No
			Content	---- Sets
			Material	-- /--
			Dimensions W x D x H(mm)	-- x -- x --
			Description of Origin	No
		Gift Box		Yes
			Material	Double/Brown
			Dimensions W x D x H(mm)	718 x 580 x 655
			Design	As per Buyer's
			Description of Origin	Yes
		Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
			Height (cm)	31
			Container Stuffing	192 Sets/40' container

G-17	Cabinet Material	Cabinet Front	PS 94V0 DECABROM
		Cabinet Rear	PS 94V0

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
(Refer to Fig. 1-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.

A cracking noise will be heard as the voltage is discharged.

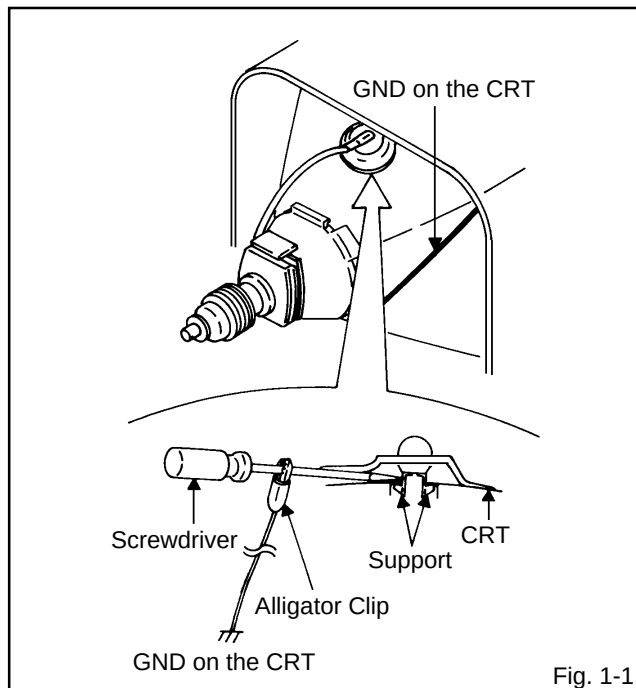


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.
(Refer to Fig. 1-2.)

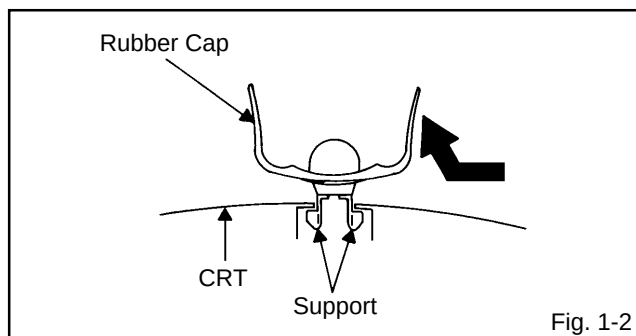


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

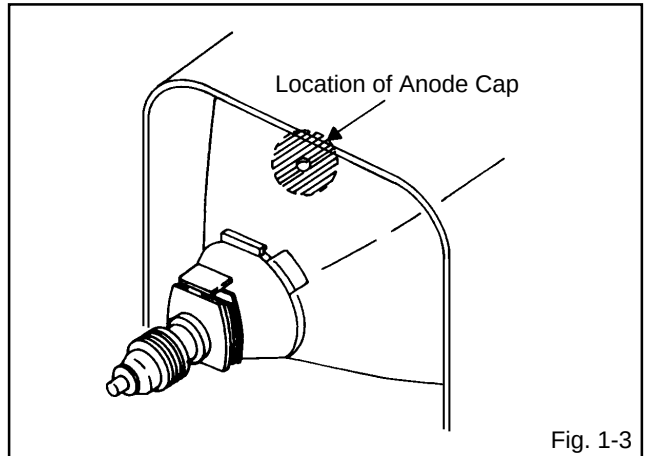


Fig. 1-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

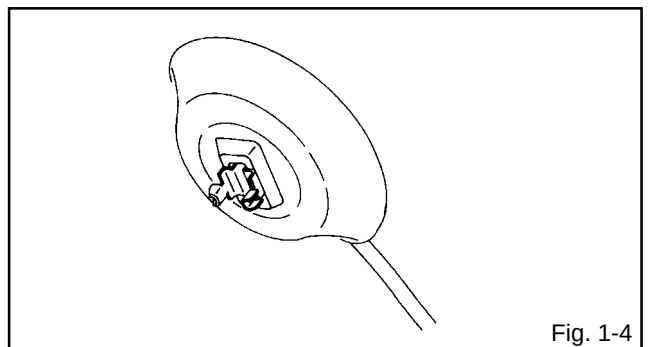


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 1-5.

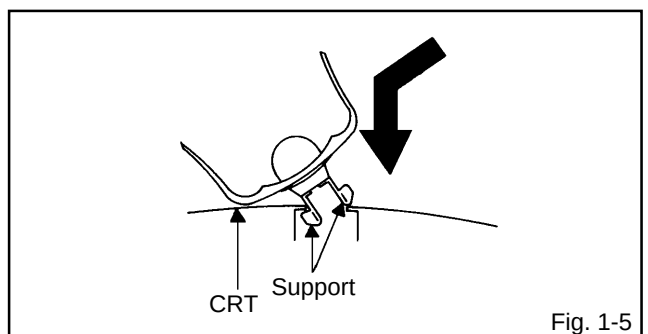


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

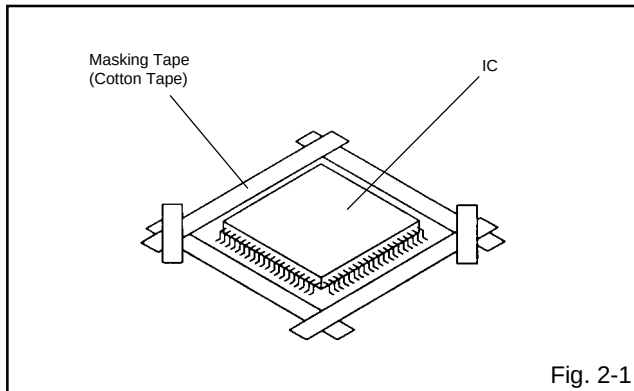
2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 2-1.)**

NOTE

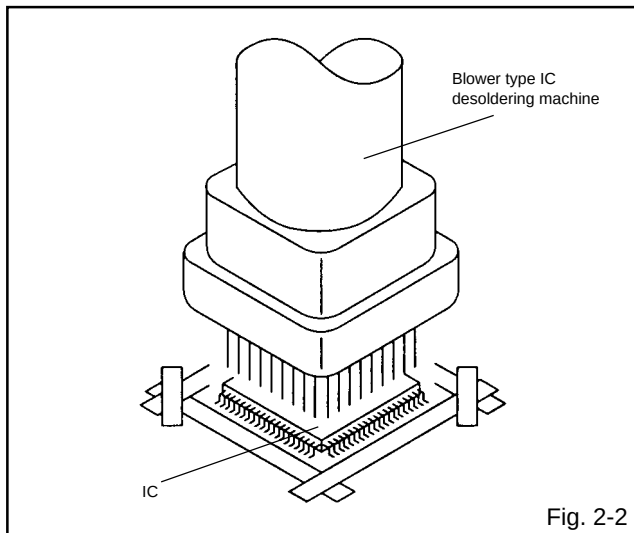
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 2-2.)**

NOTE

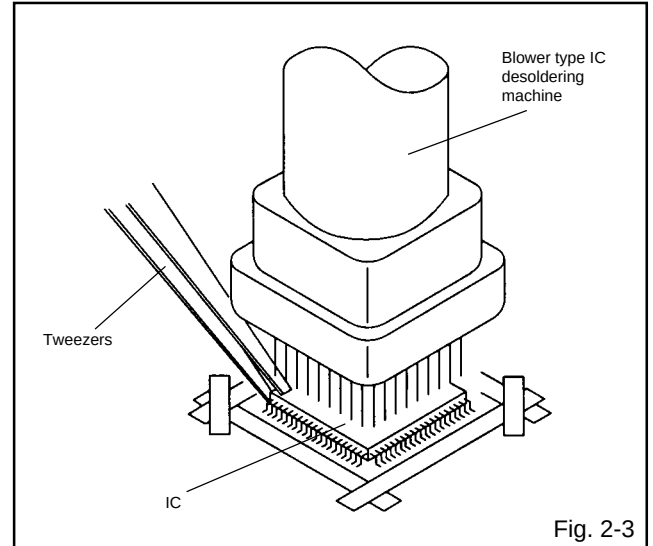
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 2-3.)**

NOTE

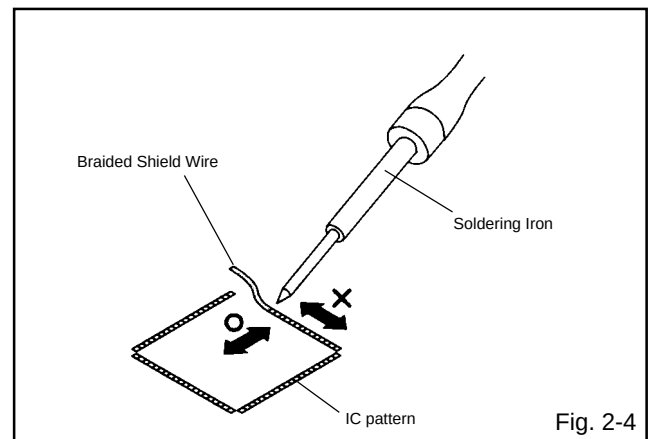
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

NOTE

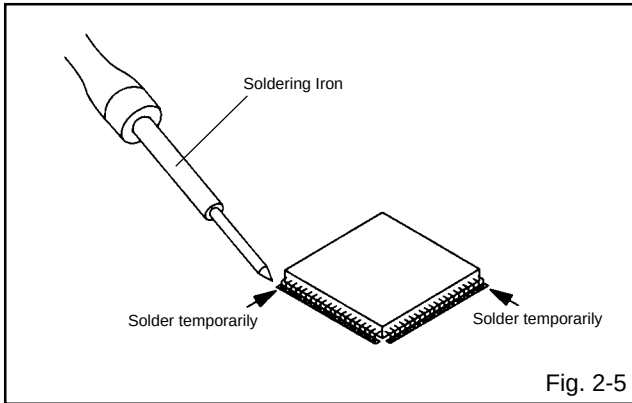
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



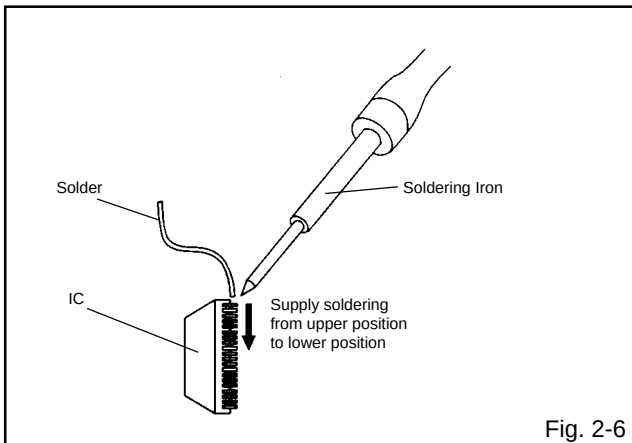
DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 2-5.)**



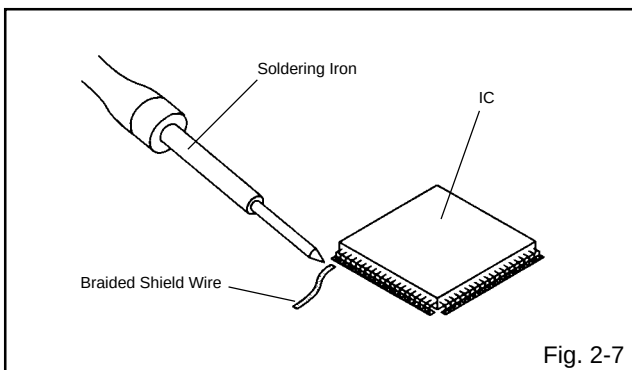
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 2-6.)**



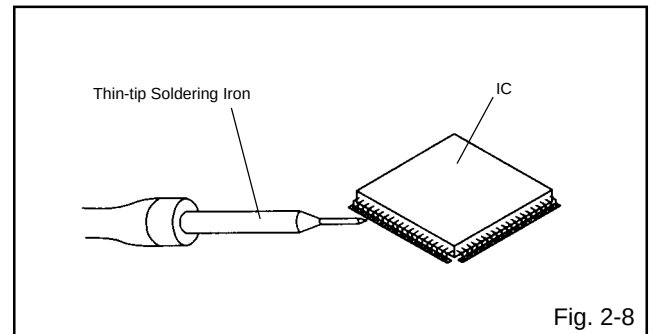
3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 2-7.)**

NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 2-8.)**



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

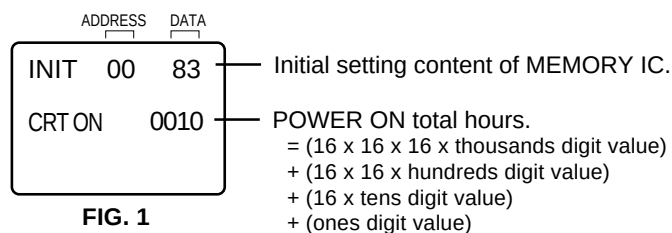
This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 1 second.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF USING HOURS". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF USING HOURS

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.



NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	A9	C3	37	30	31	B3	27	17	BA	88	44	84	00	00	00	5F
10	0F	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
Inferior silicon grease can damage IC's and transistors.
- When replacing IC's and transistors, use only specified silicon grease.
Remove all old silicon before applying new silicon.

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. AC Voltmeter

On-Screen Display Adjustment

1. In the condition of NO indication on the screen.
Press the VOL. DOWN button on the set and the Channel button (9) on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

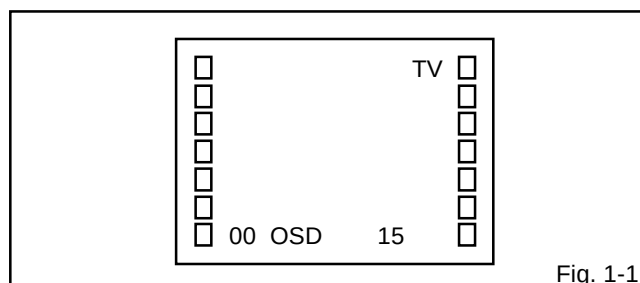


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button (0-9) on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	17	SUBCONT
01	CUT OFF	18	UNI COL
02	RF. AGC	19	---
03	---	20	TINT
04	H. POSI	21	SHARP
05	V. POSI	22	RGB CONT
06	H. SIZE	23	PARABOLA
07	V. SIZE	24	TRAPEZIU
08	V. CENT	25	COR TOP
09	V. LIN	26	COR BTM
10	VS. CORR	27	V EHT
11	G. DRV	28	H EHT
12	B. DRV	29	FM. LVL
13	R. BIAS	30	LEVEL
14	G. BIAS	31	SEP1
15	B. BIAS	32	SEP2
16	BRI	33	T. STE

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Connect the digital voltmeter to **TP002**.
3. Adjust the **VR502** until the digital voltmeter is $135 \pm 0.5V$.

2-2: RF AGC

1. Receive the VHF LOW (61dB).
2. Connect the digital voltmeter between the **TP001** and the **GND**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (02) on the remote control to select "RF. AGC".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.4V.

2-3: CUT OFF

1. Adjust the unit to the following settings.
G. DRIVE=64, B. DRIVE=64, R. BIAS=15, G. BIAS=15, B. BIAS=15, BRIGHT=75, UNI COLOR=64
2. Place the set with Aging Test for more than 15 minutes.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (01) on the remote control to select "CUT OFF".
4. Adjust the **Screen Volume** until a dim raster is obtained.

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 10 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (13) on the remote control to select "R. BIAS".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R. BIAS.
6. Press the CH. UP/DOWN button on the remote control to select the "G. DRV", "B. DRV", "G. BIAS" or "B. BIAS".
7. Using the VOL. UP/DOWN button on the remote control, adjust the G. DRV, B. DRV, G. BIAS or B. BIAS.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-5: FOCUS

1. Receive a 70dB monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-6: HORIZONTAL POSITION

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (04) on the remote control to select "H. POSI".
4. Press the VOL. UP/DOWN button on the remote control until the right and left screen size of the vertical line becomes the same.

ELECTRICAL ADJUSTMENTS

2-7: VERTICAL LINEALITY

NOTE: Adjust after performing adjustments in section 2-6.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "V. LIN".
4. Press the VOL. UP/DOWN button on the remote control until the upside and downside screen size of the horizontal line becomes the same.

2-8: VERTICAL POSITION

NOTE: Adjust after performing adjustments in section 2-7.

1. Receive the center cross signal from the Pattern Generator.
2. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.

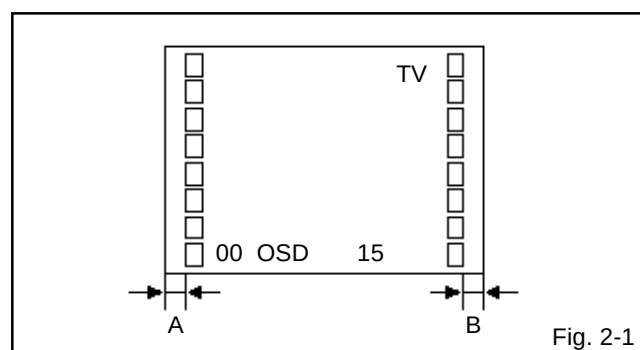
2-9: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-8.

1. Receive the crosshatch signal from the Pattern Generator.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V. SIZE".
3. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
4. Receive a broadcast and check if the picture is normal.

2-10: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (Refer to **Fig. 2-1**)



2-11: LEVEL

1. Receive a 70dB monoscope pattern.
2. Connect the AC voltmeter to **TP901**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(30)** on the remote control to select "LEVEL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is $75 \pm 2\text{mV}$.

2-12: SEPARATION 1, 2

1. Receive the stereo signal (L=2KHz, R=400Hz).
2. Connect the AC voltmeter to **AUDIO OUT JACK** through stereo filter (L=400Hz, R=2KHz).
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "SEP1".
4. Press the VOL. UP/DOWN button on the remote control until the output of L-CH and R-CH become minimum.
5. Press the CH UP button once the set to "SEP2" mode.
6. Press the VOL. UP/DOWN button on the remote control until the output of L-CH and R-CH become minimum.
7. Press the CH DOWN button once the set to "SEP1" mode.
8. Repeat step 4 to step 7 several times.
The output difference of the between with Filter and without Filter should be more than 25db for both L and R.

2-13: BRIGHTNESS

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "BRI".
2. Press the VOL. UP/DOWN button on the remote control until the brightness step No. becomes "92"
3. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 1~2.
4. Press the TV/VIDEO button on the remote control to set to the CS mode.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "BRI".
6. Press the VOL. UP/DOWN button on the remote control until the brightness step No. becomes "90"

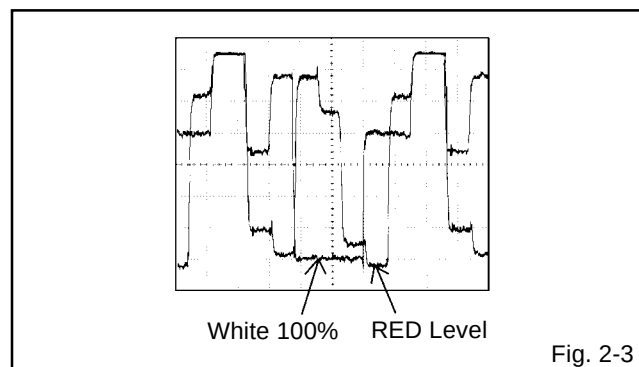
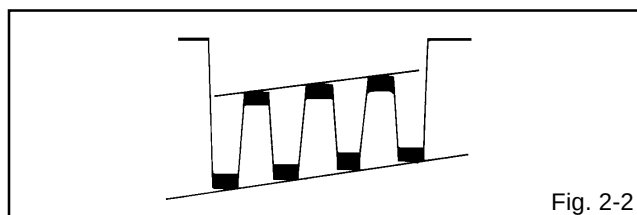
2-14: UNI-COLOR

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select "UNI COL".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "54"
3. Press the TV/VIDEO button on the remote control to set to the AV mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select "UNI COL".
5. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "58"
6. Press the TV/VIDEO button on the remote control to set to the CS mode.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select "UNI COL".
8. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "60"

ELECTRICAL ADJUSTMENTS

2-15: SUB TINT/SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP806**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "TINT".
4. Press the VOL. UP/DOWN button on the remote control until the waveform becomes as shown in **Fig. 2-2**.
5. Connect the oscilloscope to **TP804**.
6. Press the CH DOWN button 3 times to set to "SUBCONT" mode.
7. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $105 \pm 5\%$ of the white level. (**Refer to Fig. 2-3**)
8. Receive the color bar pattern. (Audio Video Input)
9. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.
10. Press the TV/VIDEO button on the remote control to set to the CS mode.
11. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "TINT".
12. Press the VOL. UP/DOWN button on the remote control to increase the step numbers by 6 steps to the AV.
13. Press the CH DOWN button 3 times to set to "SUBCONT" mode.
14. Press the VOL. UP/DOWN button on the remote control to set the same step number as the AV.



2-16: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV	CS
05	V. POSI	00	---	---
06	H. SIZE	00	---	---
08	V. CENT	35	---	---
10	VS. CORR	12	---	---
21	SHARP	30	35	35
22	RGB CONT	25	---	---
23	PARABOLA	00	---	---
24	TRAPEZIU	00	---	---
25	COR TOP	00	---	---
26	COR BTM	00	---	---
27	V EHT	00	---	---
28	H EHT	00	---	---
29	FM. LVL	01	---	---

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

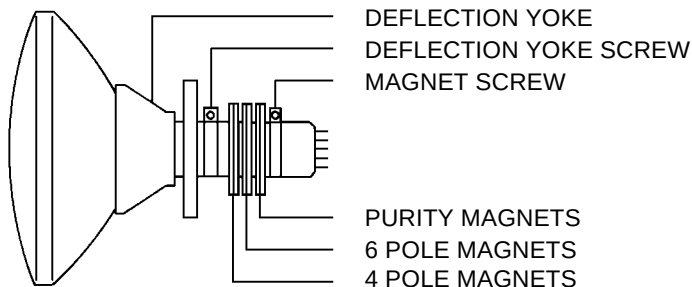


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

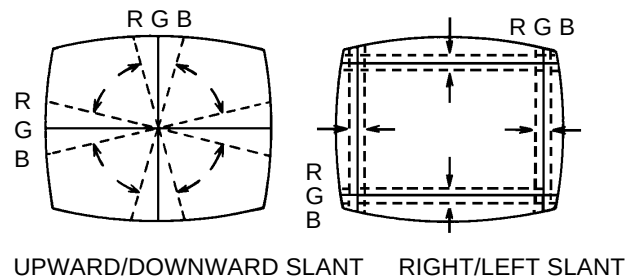


Fig. 3-2-a

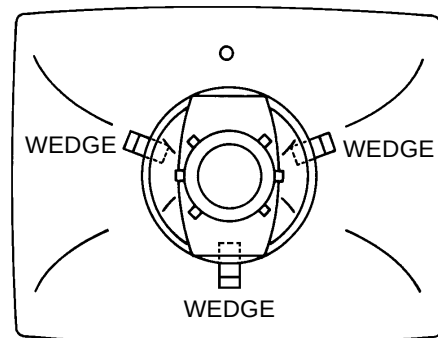
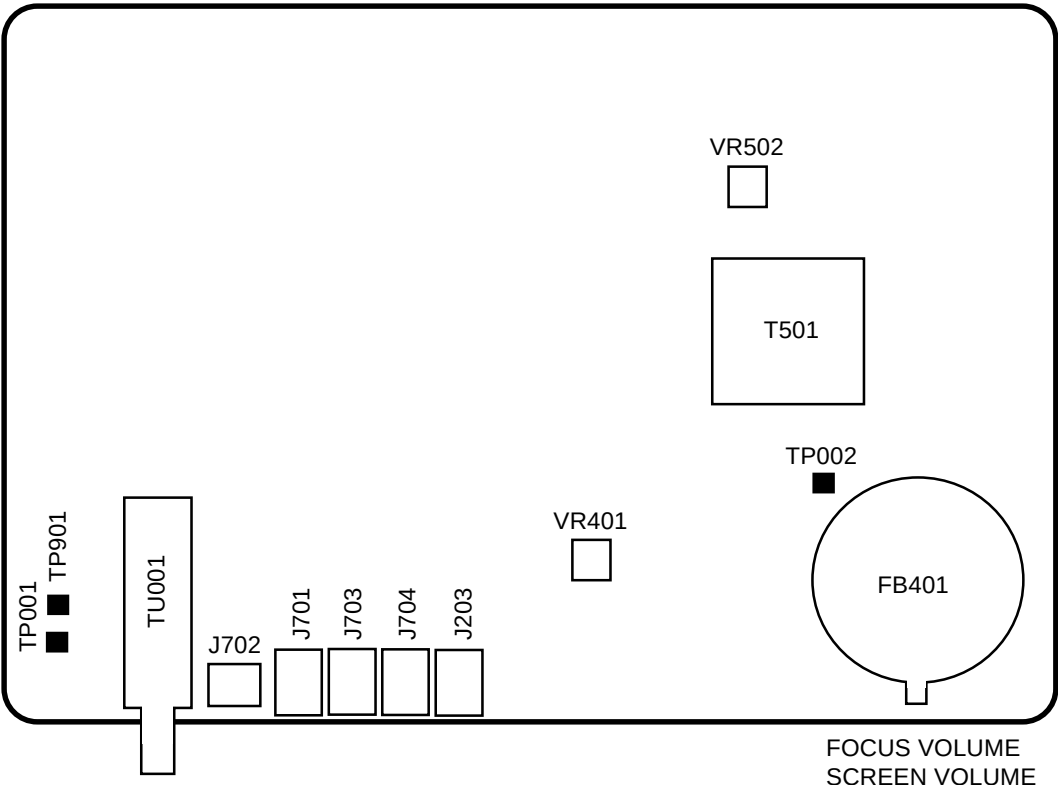
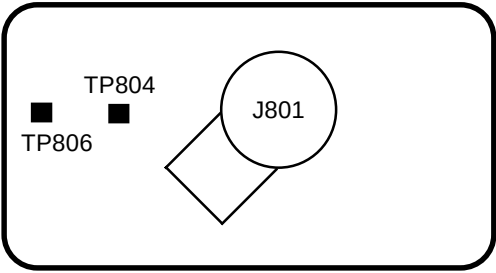


Fig. 3-2-b

MAJOR COMPONENTS LOCATION GUIDE

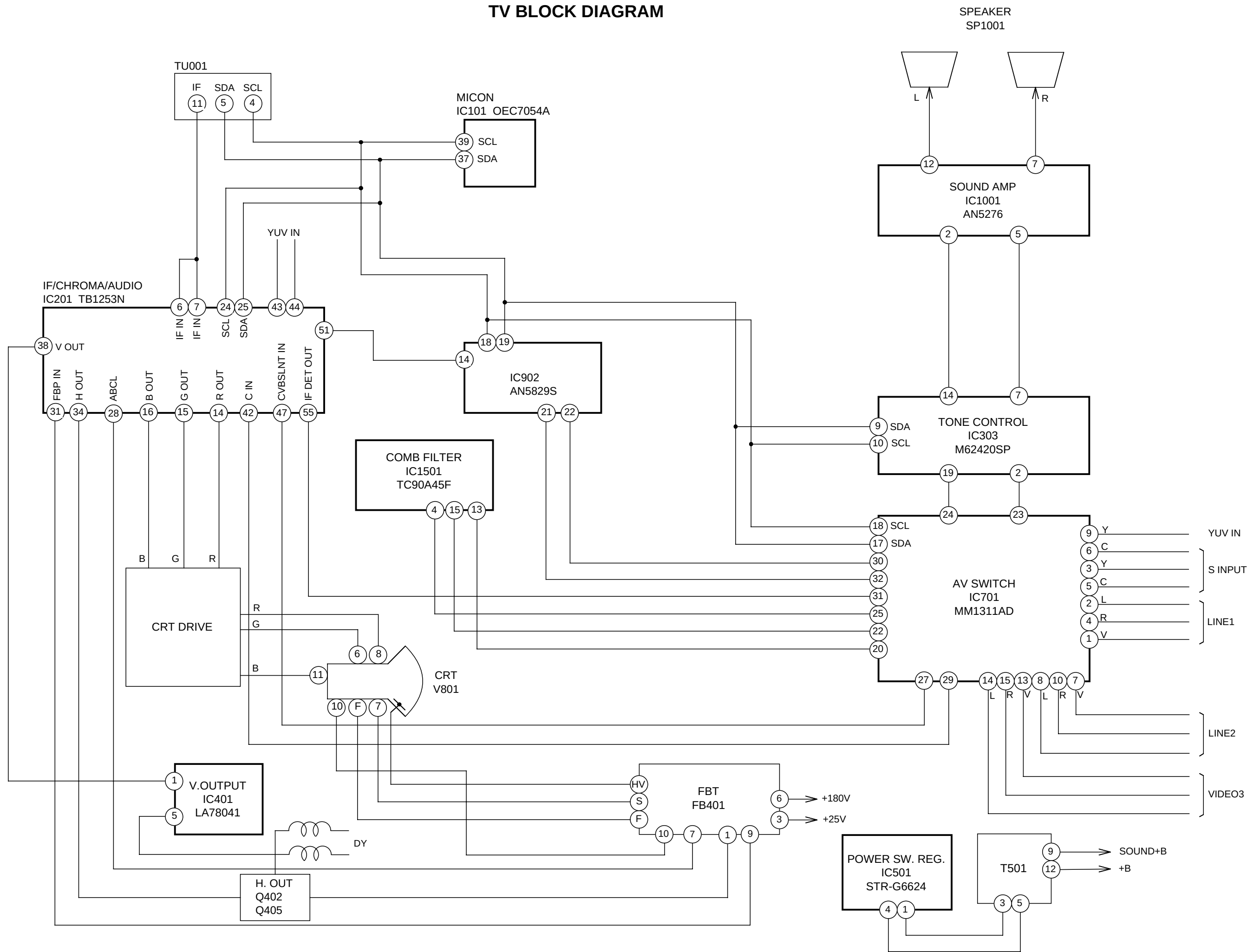


MAIN PCB



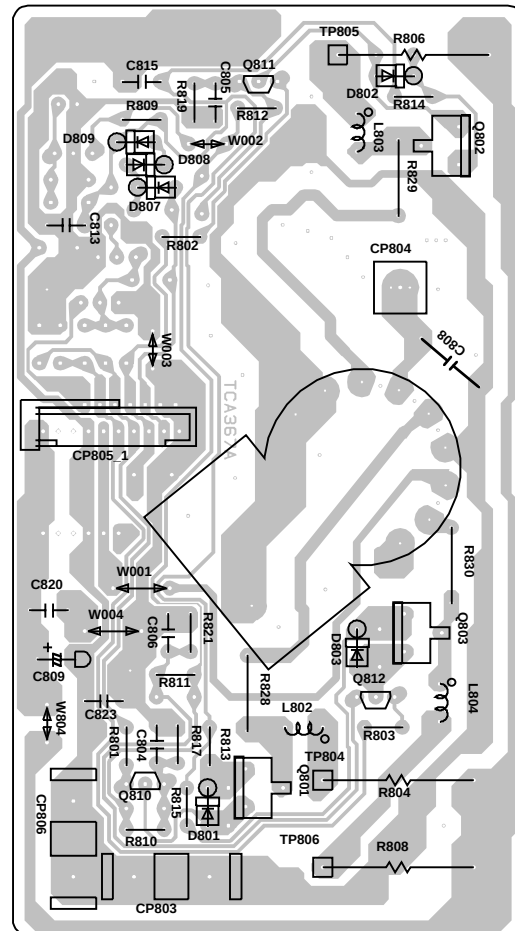
CRT PCB

TV BLOCK DIAGRAM

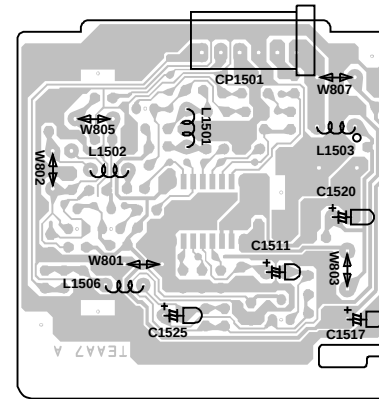


PRINTED CIRCUIT BOARDS

**CRT
SOLDER SIDE**

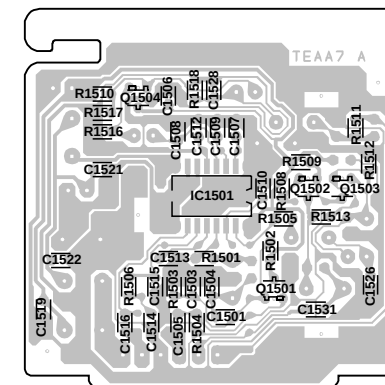


**(INSERTED PARTS)
SOLDER SIDE**

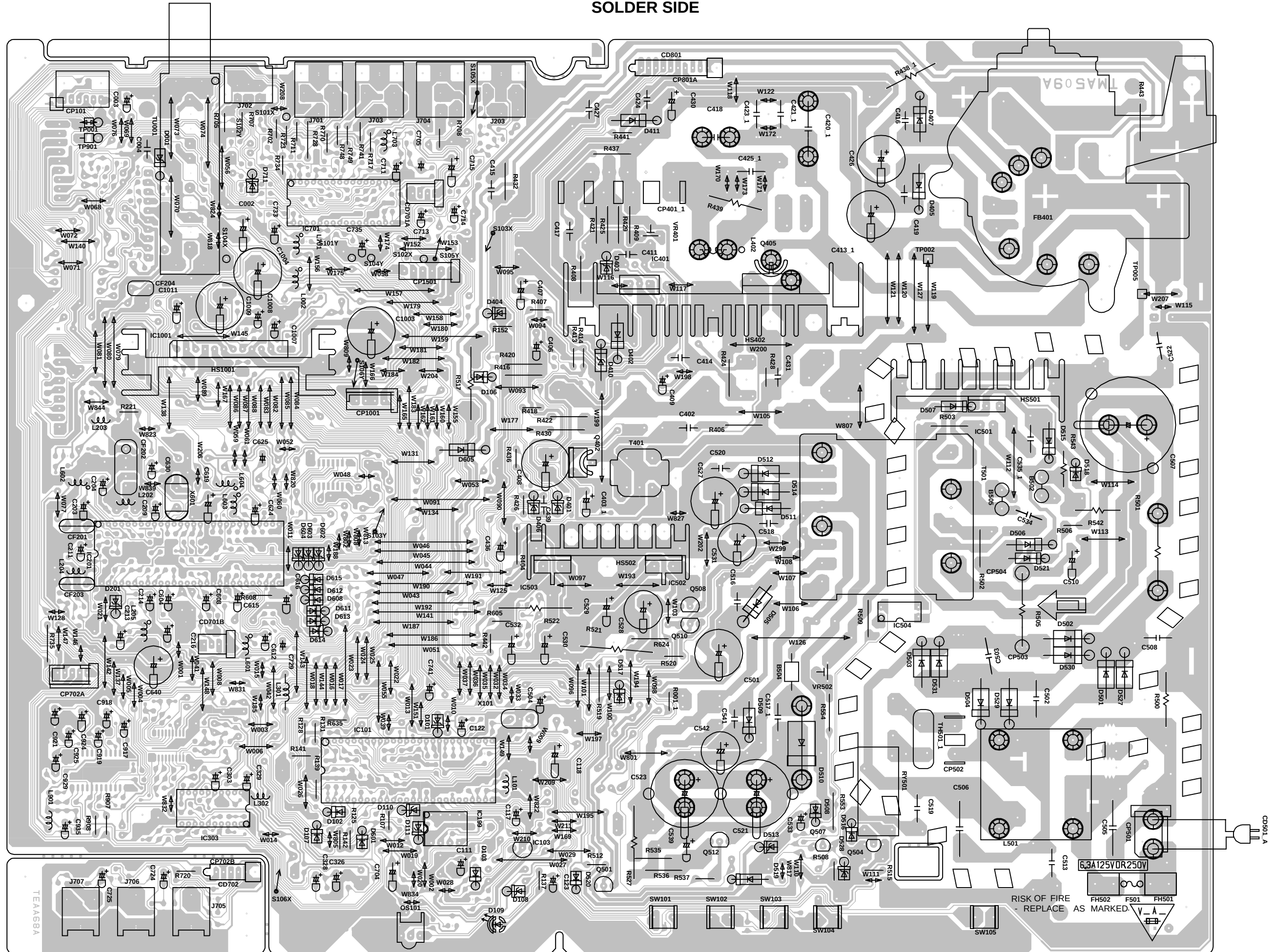


COMB

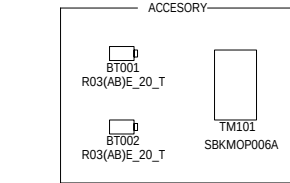
**(CHIP MOUNTED PARTS)
SOLDER SIDE**



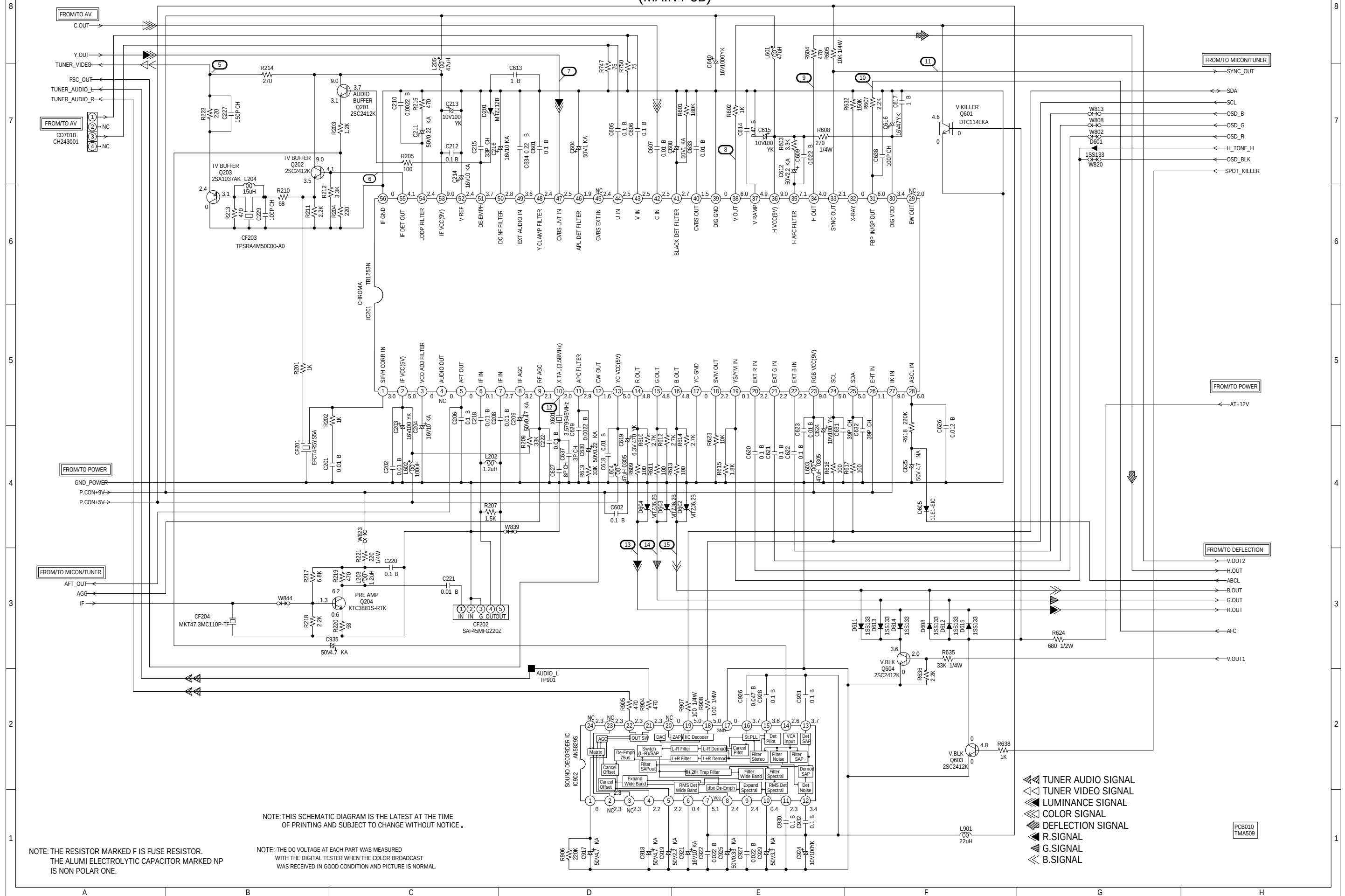
**PRINTED CIRCUIT BOARDS
MAIN/VIDEO JACK (INSERTED PARTS)
SOLDER SIDE**



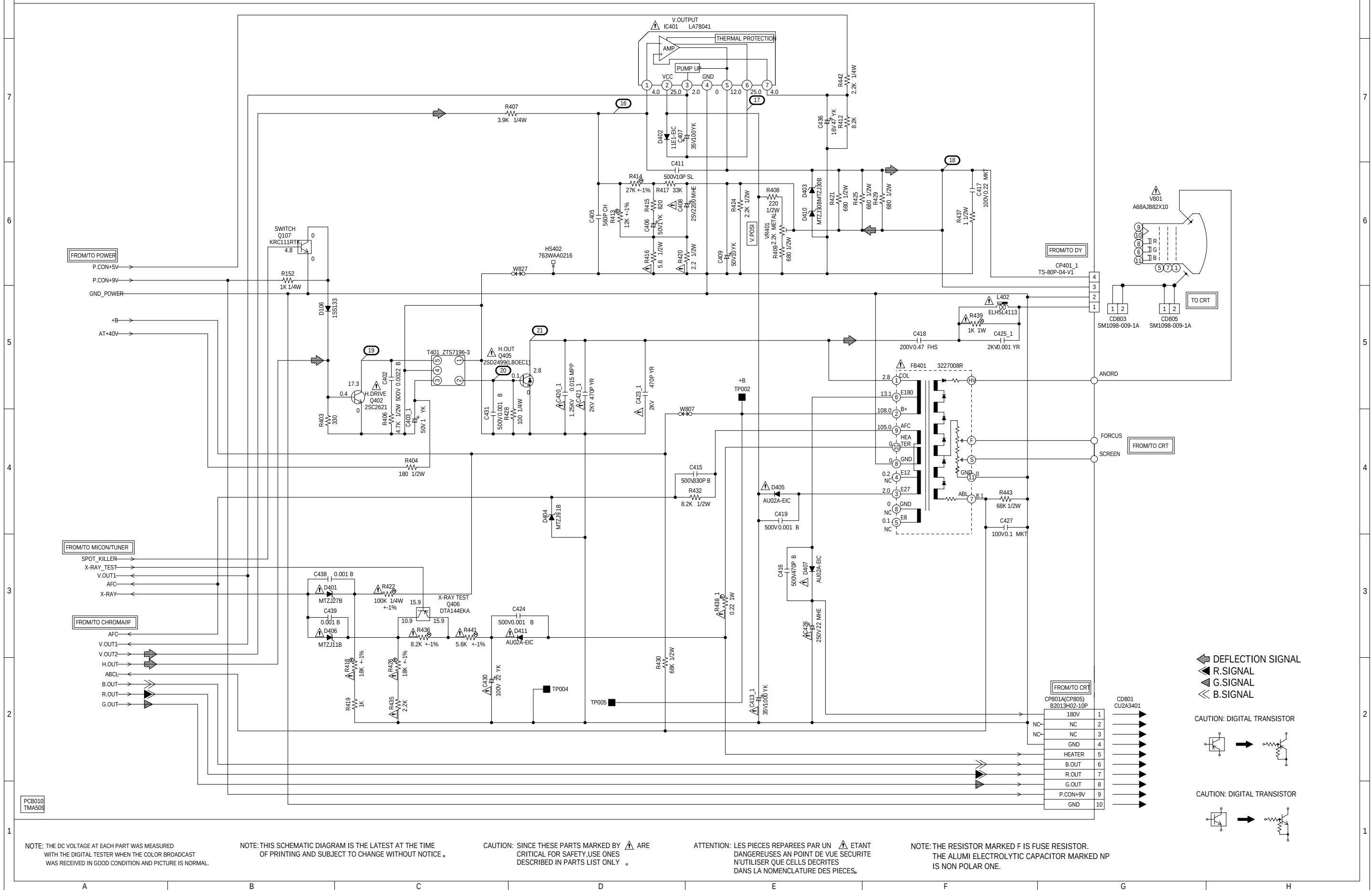
(MAIN PCB)

PCB010
TMA509

(MAIN PCB)



DEFLECTION SCHEMATIC DIAGRAM
(MAIN PCB)



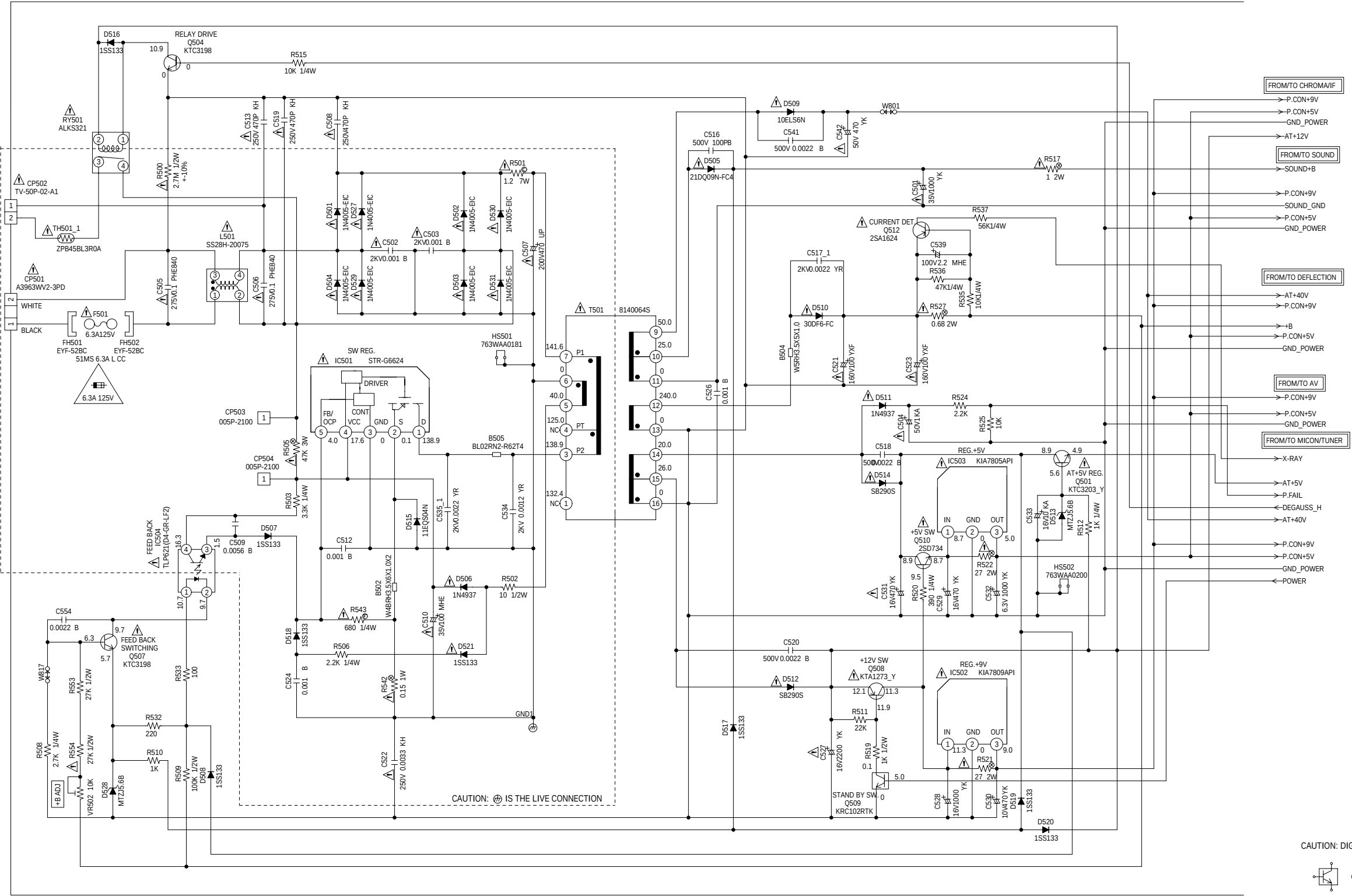
POWER SCHEMATIC DIAGRAM

(MAIN PCB)



CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE
6.3A 125V(F501)

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE
N'UTILISER QUE DES FUSIBLE DE MEME TYPE
6.3A 125V(F501)



FROM/TO CHROMA/IF

P.CON+9V

P.CON+5V

GND_POWER

AT+12V

FROM/TO SOUND

SOUND+B

P.CON+9V

SOUND_GND

P.CON+5V

GND_POWER

FROM/TO DEFLECTION

AT+40V

P.CON+9V

P.CON+5V

GND_POWER

FROM/TO AV

P.CON+9V

P.CON+5V

GND_POWER

FROM/TO MICON/TUNER

X-RAY

AT+5V

P.FAIL

DEGAUSS_H

AT+40V

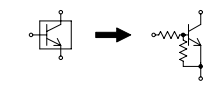
P.CON+9V

P.CON+5V

GND_POWER

POWER

CAUTION: DIGITAL TRANSISTOR



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE
CRITICAL FOR SAFETY, USE ONES
DESCRIBED IN PARTS LIST ONLY.

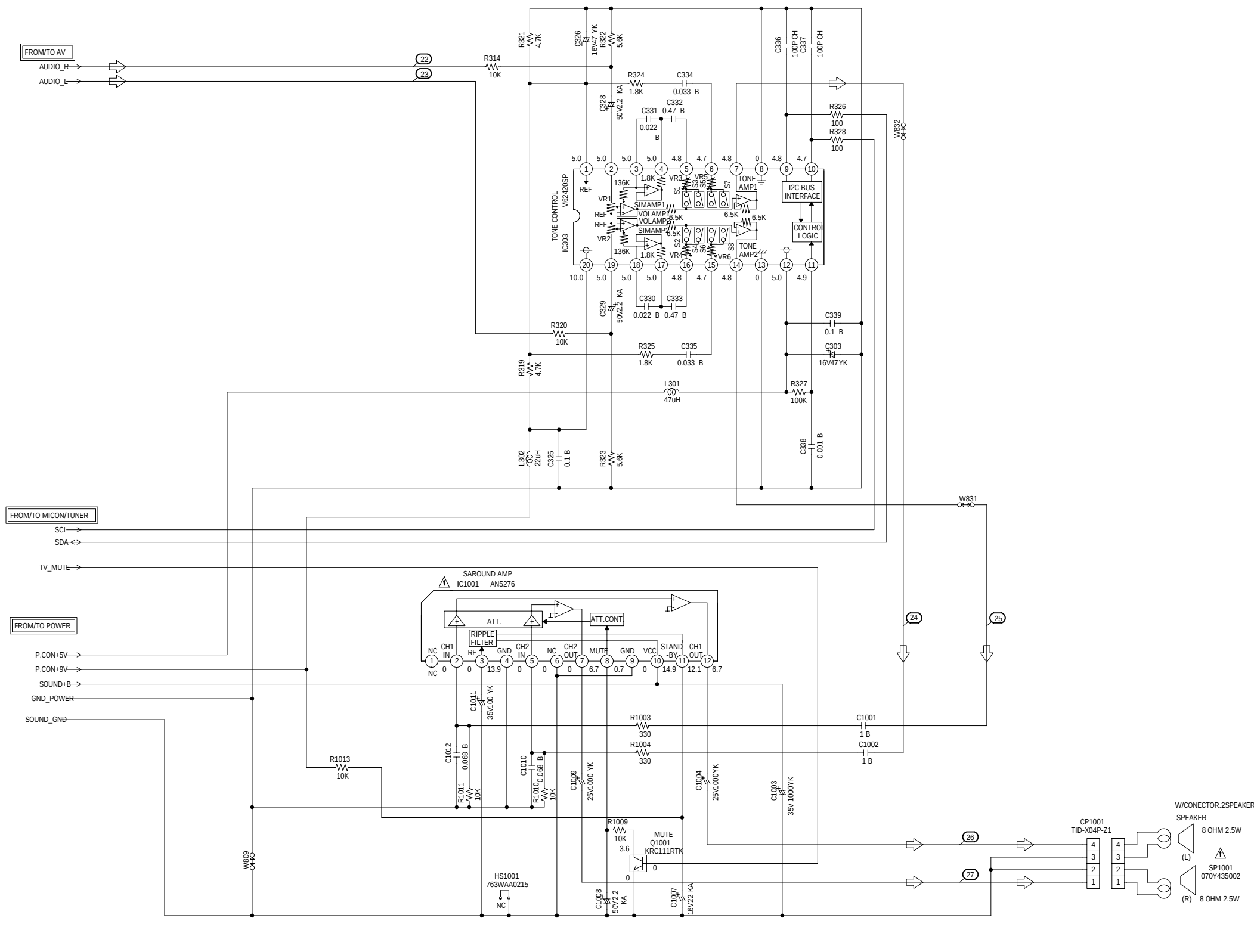
ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DÉCRITES
DANS LA NOMENCLATURE DES PIECES.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

PCB010
TMA509

SOUND SCHEMATIC DIAGRAM

(MAIN PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

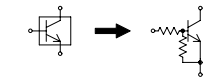
CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

← AUDIO SIGNAL

CAUTION: DIGITAL TRANSISTOR



PCB010
TMA509

AV SCHEMATIC DIAGRAM

(MAIN PCB)

(VIDEO JACK PCB)

FROM/TO COMB FILTER

6	MONITOR V.OUT
5	Y IN
4	C IN
3	GND
2	FSC
1	P.CON+5V

FROM/TO POWER

P.CON+9V
P.CON+5V
GND_POWER

FROM/TO CHROMA/IF

FSC_OUT
TUNER_AUDIO_L
TUNER_AUDIO_R
TUNER_VIDEO

FROM/TO SOUND

AUDIO_L
AUDIO_R

FROM/TO MICON/TUNER

EXT_MUTE
CV_IN
SCL
SDA

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

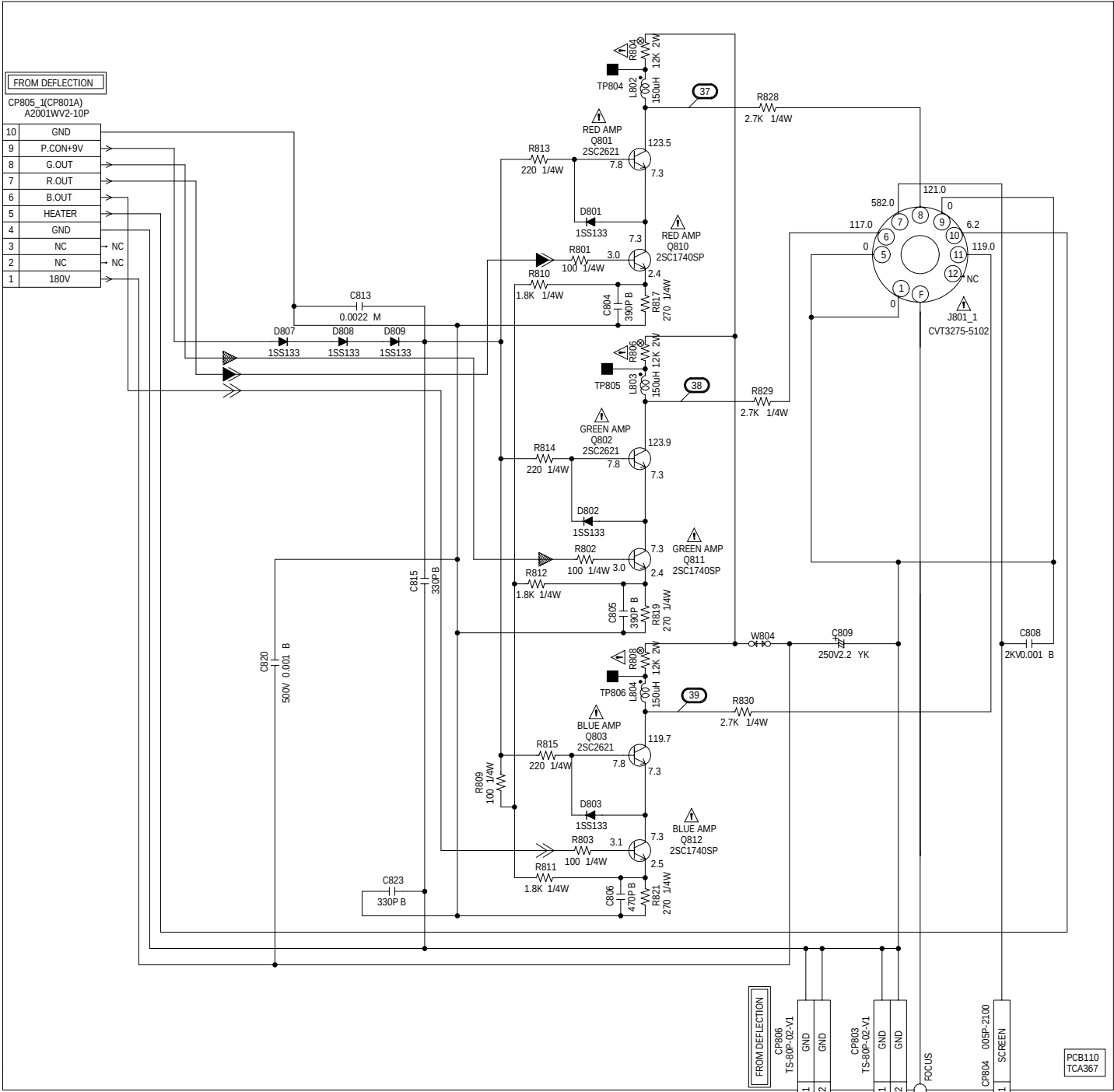
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

- AUDIO SIGNAL
- TUNER AUDIO SIGNAL
- TUNER VIDEO SIGNAL
- COLOR SIGNAL
- LUMINANCE SIGNAL

CRT SCHEMATIC DIAGRAM

(CRT PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

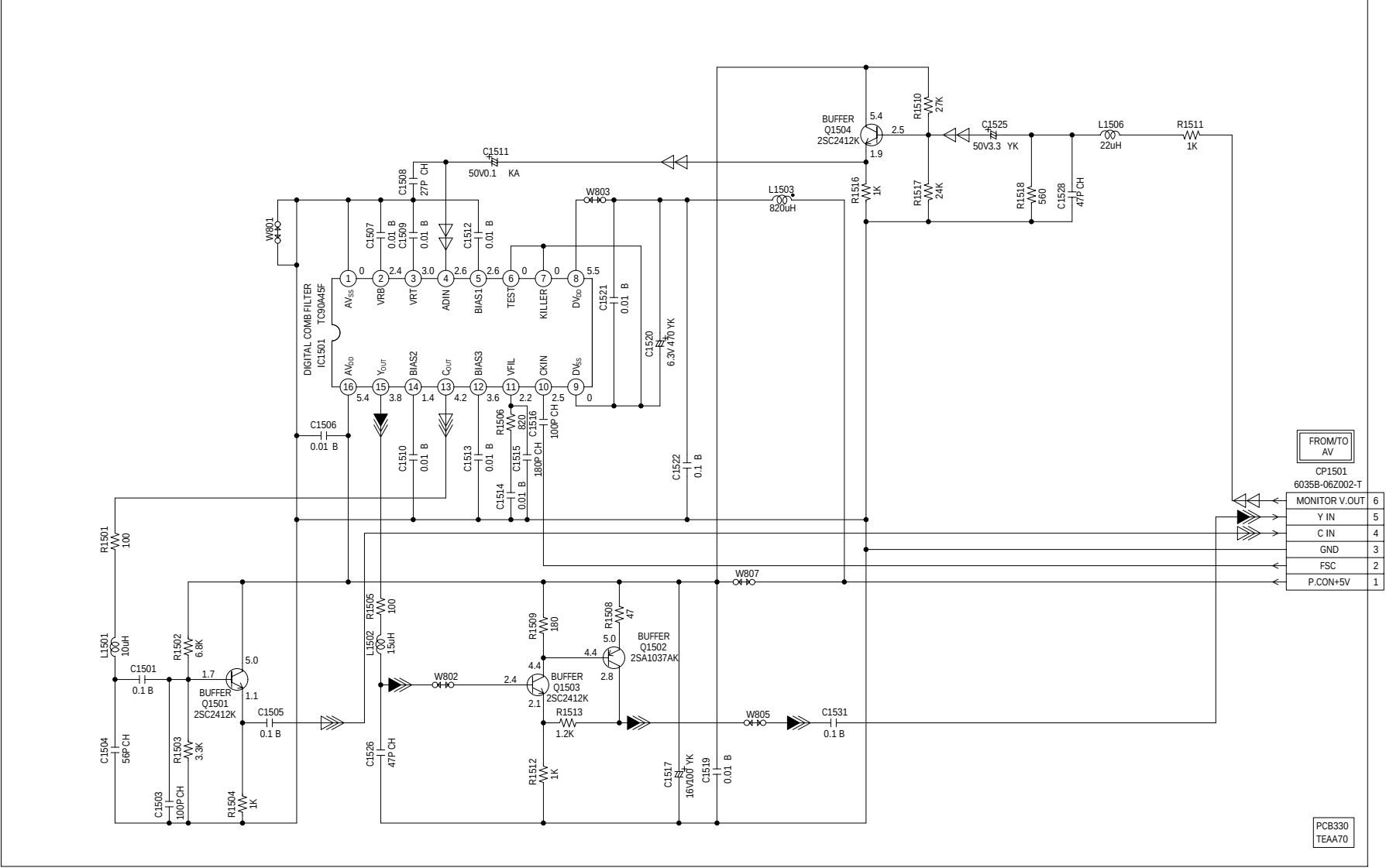
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

R.SIGNAL
 G.SIGNAL
 B.SIGNAL

DIGITAL COMB FILTER SCHEMATIC DIAGRAM

(COMB PCB)



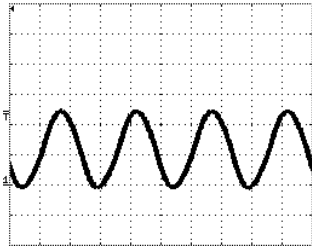
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

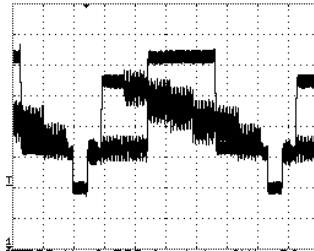
- RECORD COLOR SIGNAL
- RECORD LUMINANCE SIGNAL
- TUNER VIDEO SIGNAL

WAVEFORMS

MICON/TUNER



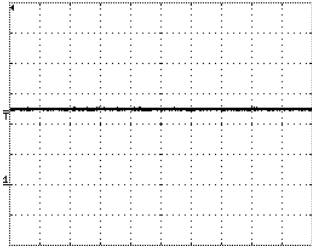
① 2.0V 50ns/div



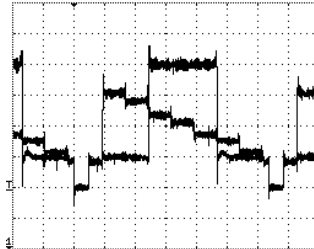
⑥ 500mV 10μs/div



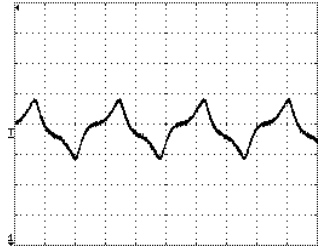
⑪ 500mV 50μs/div



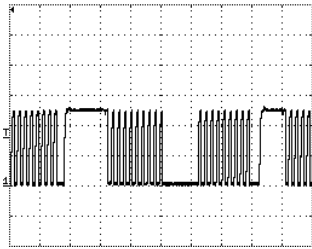
② 2.0V 50ns/div



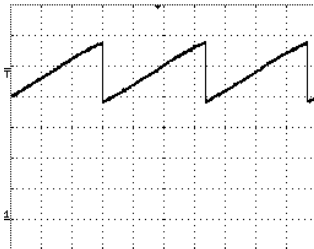
⑦ 200mV 10μs/div



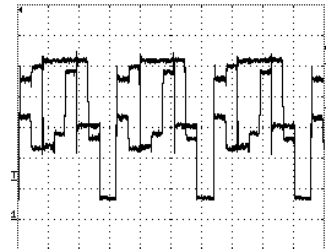
⑫ 100mV 100ns/div



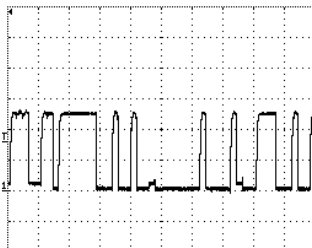
③ 2.0V 50μs/div



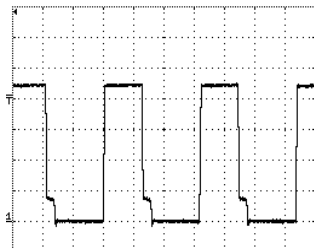
⑧ 1.0V 5ms/div



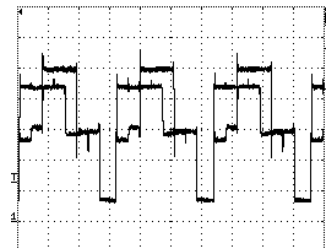
⑬ 1.0V 20μs/div



④ 2.0V 50μs/div

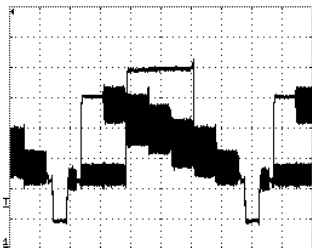


⑨ 1.0V 20μs/div

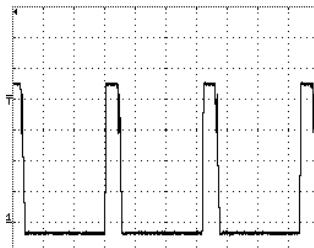


⑭ 1.0V 20μs/div

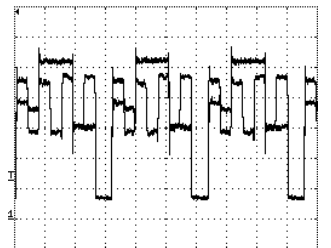
CHROMA/IF



⑤ 200mV 10μs/div



⑩ 2.0V 20μs/div

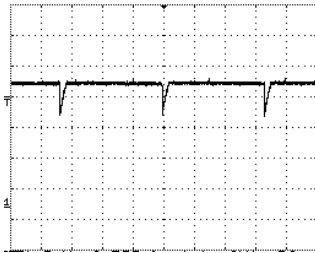


⑮ 1.0V 20μs/div

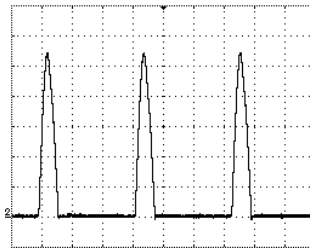
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

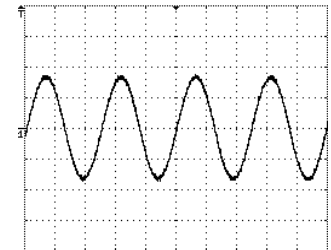
DEFLECTION



①⑥ 1.0V 5ms/div

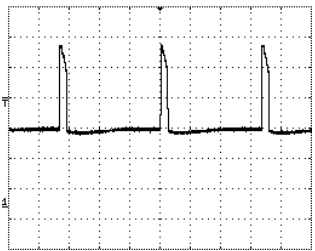


②① 200V 20μs/div

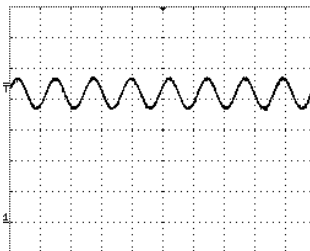


②⑥ 500mV 1ms/div

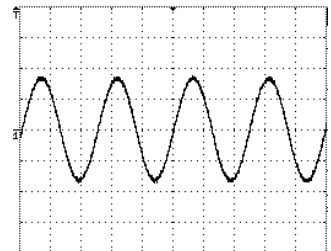
SOUND



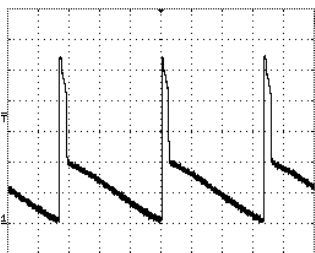
①⑦ 10V 5ms/div



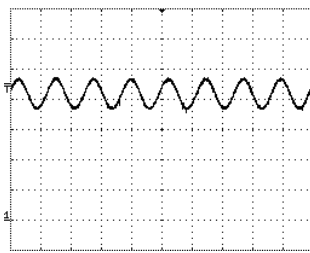
②② 1.0V 2ms/div



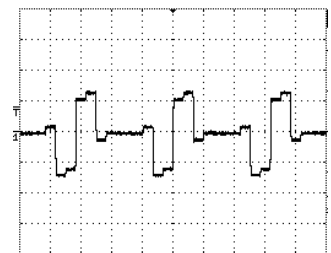
②⑦ 500mV 1ms/div



①⑧ 10V 5ms/div



②③ 1.0V 2ms/div

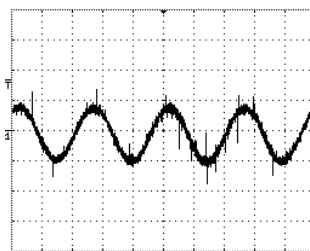


②⑧ 200mV 20μs/div

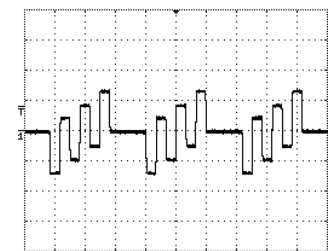
AV



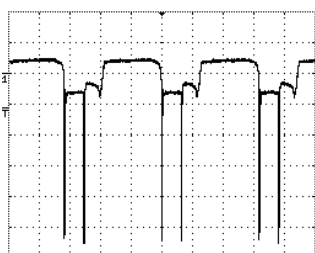
①⑨ 50V 20μs/div



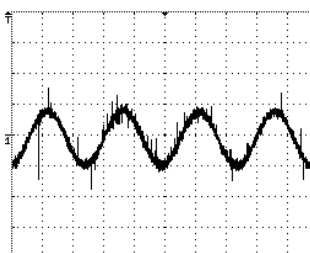
②④ 20mV 1ms/div



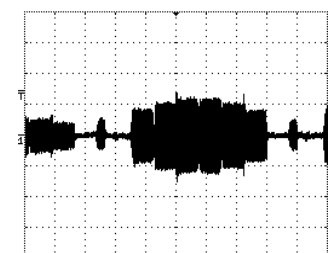
②⑨ 200mV 20μs/div



②⑩ 2.0V 20μs/div

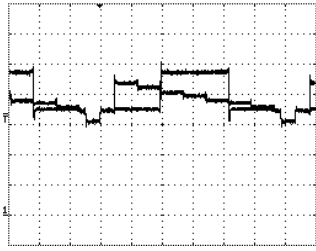


②⑤ 20mV 1ms/div

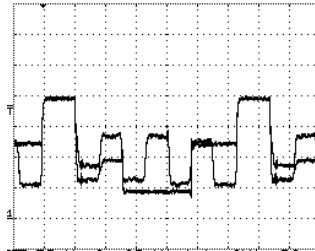


③⑩ 100mV 10μs/div

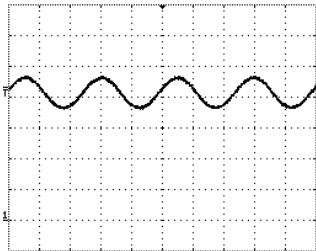
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.



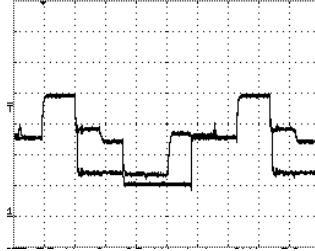
③① 500mV 10μs/div



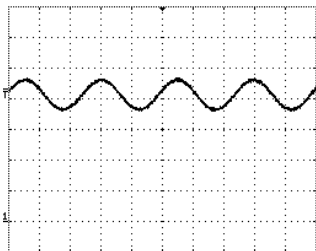
③⑧ 50V 10μs/div



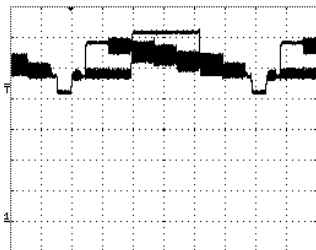
③② 1.0V 1ms/div



③⑨ 50V 10μs/div

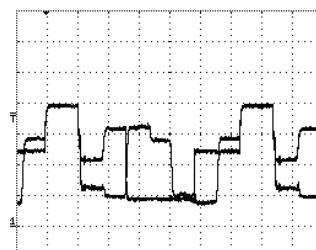


③③ 1.0V 1ms/div



③④ 1.0V 10μs/div

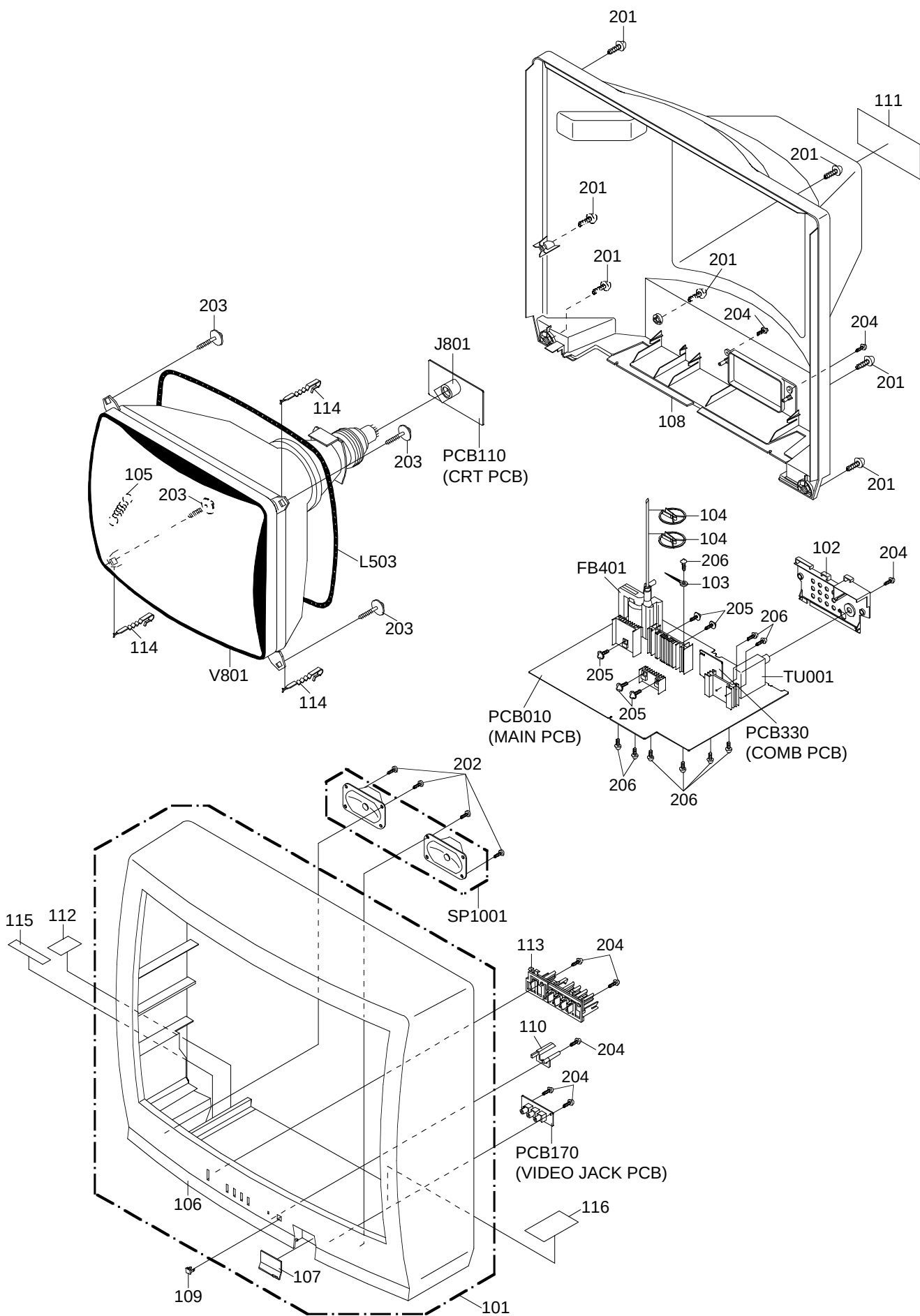
CRT



③⑦ 50V 10μs/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AD300828	A3K109E720	CABINET,FRONT ASSY	
102	AD300757	771WPA0263	PLATE,JACK	
103	AD300758	899EFBA001	WIRING CLIP	
104	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
105	AD300759	741WUA0021	SPRING,EARTH	
106	AD300760	701APJ0082	CABINET,FRONT	
107	AD300761	712APB0001	DOOR	
108	AD300762	702APA0128	CABINET,BACK	
109	AD300763	711WPA0149	PLATE,FRONT	
110	AD300764	713WPA0163	GLASS,LED	
111	AD300829	7225490055	SHEET,RATING	
112	AD300830	7230006856	SHEET,CAUTION	
113	AD300767	735WPB0134	BUTTON ASS'Y	
114	AD300768	762WPA0009	HOLDER,CRT WIRE	
115	AD300831	7220001109	SHEET,HWC	
116	AD300832	7240001041	SHEET,CSA WARNING	
201	BZ710036	8117540B04	SCREW,TAPPING(B0) TRUSS	4x20
202	AD300769	8117330A04	SCREW,TAPPING(B0) FLAT	3x10
203	BZ710033	8111J50D05	SCREW,TAPPING(A) GW22	5x35
204	BZ710031	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
205	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
206	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
---	AD300770	791AHA0024	FILM,BAG	
---	AD300771	792AHA0085	PACKAGE, TOP	
---	AD300772	792AHA0086	PACKAGE,BOTTOM	
---	AD300773	793ACD0500	GIFT BOX	
---	AD300833	A3K109E975	INSTRUCTION BOOK KIT	
---	AD300834	J3K10815	SERVICE STATION LIST	
---	AD300835	J3K10816	IMPORTANT SAFETY INSTRUCTIONS	
---	AD300836	J3K10817	REGISTRATION CARD	
---	AD300837	J3K10825	ENVELOPE	
---	AD300838	J3K10901	INSTRUCTION BOOK	
---	AD300839	JA4LD500	POLY BAG	

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.	Description
RESISTORS			
△R416	AD300416	R002T25R6J RC	5.6 OHM 1/2W
△R418	BZ210105	R4X5T6183F R,METAL	18K OHM 1/6W
△R420	BZ210053	R002T22R2J RC	2.2 OHM 1/2W
△R422	BZ210013	R4X5T4104F R,METAL	100K OHM 1/4W
△R426	BZ210105	R4X5T6183F R,METAL	18K OHM 1/6W
△R435	AD300655	R903N8222J RC	2.2K OHM 1/8W
△R436	BZ210090	R4X5T6822F R,METAL	8.2K OHM 1/6W
△R438	BZ210190	R63581R22J R,FUSE	0.22 OHM 1W
△R439	AD300043	R3X181102J R,METAL OXIDE	1K OHM 1W
△R441	AD300036	R4X5T6562F R,METAL	5.6K OHM 1/6W
△R500	BZ210080	R0G3K2275K RC	2.7M OHM 1/2W
△R501	AD300720	R5X2AE1R2J R,CEMENT	1.2 OHM 7W
△R505	AD300038	R3X20B473J R,METAL	47K OHM 3W
△R517	AD300042	R3X18A010J R,METAL OXIDE	1 OHM 2W
△R521	AD300041	R3X18A270J R,METAL OXIDE	27 OHM 2W
△R522	AD300041	R3X18A270J R,METAL OXIDE	27 OHM 2W
△R527	BZ210149	R3X18AR68J R,METAL OXIDE	0.68 OHM 2W
△R542	AD300721	R3X281R15J R,METAL	0.15 OHM 1W
△R543	BZ210064	R63584681J R,FUSE	680 OHM 1/4W
△R554	AD300722	R002T2273J RC	27K OHM 1/2W
△R804	BZ210050	R3X18A123J R,METAL OXIDE	12K OHM 2W
△R806	BZ210050	R3X18A123J R,METAL OXIDE	12K OHM 2W
△R808	BZ210050	R3X18A123J R,METAL OXIDE	12K OHM 2W
CAPACITORS			
△C408	BZ110101	E5EZF3222M CE	2200 UF 25V
△C413	AD300067	E02LF4102M CE	1000 UF 35V
C418	BZ110056	P447F2474J CMPP	0.47 UF 200V FHS
△C420	AD300723	P4N8FJ153H CMPP	0.015 UF 1.25KV
△C421	BZ110125	C0JLYR7Q2K CC	470 PF 2KV YR
△C423	BZ110125	C0JLYR7Q2K CC	470 PF 2KV YR
C425	AD300077	C0JLYR713K CC	0.001 UF 2KV YR
△C426	AD300061	E5EZF2220M CE	22 UF 250V
△C430	AD300064	E02LT8220M CE	22 UF 100V
△C501	AD300067	E02LF4102M CE	1000 UF 35V
△C502	AD300078	C0JBB0713K CC	0.001 UF 2KV B
△C503	AD300078	C0JBB0713K CC	0.001 UF 2KV B
△C504	BZ110074	E50HU5010M CE	1 UF 50V
△C505	BZ110145	P2472B104M CMP	0.1 UF 275V PHE840
△C506	BZ110145	P2472B104M CMP	0.1 UF 275V PHE840
△C507	BZ110012	E51CGC471M CE	470 UF 200V
△C508	AD300726	CB3LB0MQ2K CC	470 PF 250V
△C510	BZ110018	E5EZF4101M CE	100 UF 35V
△C513	AD300726	CB3LB0MQ2K CC	470 PF 250V
C517	BZ110115	C0JLYR7H3K CC	0.0022UF 2KV YR
△C519	AD300726	CB3LB0MQ2K CC	470 PF 250V
△C521	AD300060	E62NFB101M CE	100 UF 160V
△C522	AD300727	CB3LE0ML3M CC	0.0033UF 250V
△C523	AD300060	E62NFB101M CE	100 UF 160V
△C527	BZ110119	E02LF2222M CE	2200 UF 16V
△C531	BZ110081	E02LT2471M CE	470 UF 16V
△C534	BZ110152	C0JLYR7B3K CC	0.0012UF 2KV YR
C535	BZ110115	C0JLYR7H3K CC	0.0022UF 2KV YR
△C542	AD300728	E02LF5471M CE	470 UF 50V
C808	AD300078	C0JBB0713K CC	0.001 UF 2KV B
C1003	AD300067	E02LF4102M CE	1000 UF 35V
C1004	BZ110053	E02LF3102M CE	1000 UF 25V
C1009	BZ110053	E02LF3102M CE	1000 UF 25V
DIODES			
D001	AD300729	D97U03301A DIODE,ZENER	MTZJ33A T-77
D101	BZ410020	D97U05R11B DIODE,ZENER	MTZJ5.1B T-77
D102	BZ410006	D1VT001330 DIODE,SILICON	1SS133T-77
D103	BZ410006	D1VT001330 DIODE,SILICON	1SS133T-77
D106	BZ410006	D1VT001330 DIODE,SILICON	1SS133T-77
D107	BZ410006	D1VT001330 DIODE,SILICON	1SS133T-77
D108	BZ410021	D97U05R61B DIODE,ZENER	MTZJ5.6B T-77
D109	BZ410054	0021721150 LED	SLR-342VCT32
D110	BZ410022	D97U06R81B DIODE,ZENER	MTZJ6.8B T-77
D111	BZ410022	D97U06R81B DIODE,ZENER	MTZJ6.8B T-77
D201	AD300070	D97U01201B DIODE,ZENER	MTZJ12B T-77
△D401	AD300069	D97U02701B DIODE,ZENER	MTZJ27B T-77
D402	BZ410043	D2WT011E10 DIODE,SILICON	11E1-EIC
D403	BZ410019	D97U03001B DIODE,ZENER	MTZJ30B T-77
D404	BZ410023	D97U09R11B DIODE,ZENER	MTZJ9.1B T-77
△D405	BZ410063	D2WTAU02A0 DIODE,SILICON	AU02A-EIC
△D406	AD300071	D97U01101B DIODE,ZENER	MTZJ11B T-77
△D407	BZ410063	D2WTAU02A0 DIODE,SILICON	AU02A-EIC
D410	BZ410019	D97U03001B DIODE,ZENER	MTZJ30B T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.	Description
DIODES			
△D411	BZ410063	D2WTAU02A0	DIODE,SILICON AU02A-EIC
△D501	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△D502	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△D503	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△D504	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△D505	BZ410052	D28F21DQN9	DIODE,SCHOTTKY 21DQ09N-FC4
△D506	AD300731	D2WXN49370	DIODE,SILICON 1N4937
D507	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D508	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△D509	AD300075	D28TELS6N6	DIODE,RECTIFER 10ELS6N-TA1B2
△D510	AD300076	D28F30DF60	DIODE,RECTIFER 30DF6-FC
△D511	AD300731	D2WXN49370	DIODE,SILICON 1N4937
△D512	BZ410076	D2WXB290S0	DIODE,SILICON SB290S
D513	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
△D514	BZ410076	D2WXB290S0	DIODE,SILICON SB290S
D515	AD300732	D28XQS04N0	DIODE,SCHOTTKY 11EQS04N-TA2B5
D516	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D517	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D518	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D519	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D520	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△D521	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
△D527	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
D528	BZ410021	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
△D529	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△D530	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
△D531	BZ410085	D2WXN40050	DIODE,SILICON 1N4005-EIC
D601	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D602	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
D603	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
D604	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
D605	BZ410043	D2WT011E10	DIODE,SILICON 11E1-EIC
D608	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D611	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D612	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D613	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D614	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D615	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D711	BZ410066	D97U06R21B	DIODE,ZENER MTZJ6.2B T-77
D801	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D807	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D808	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
D809	BZ410006	D1VT001330	DIODE,SILICON 1SS133T-77
ICS			
IC101	AD300051	I56D07054A	IC OEC7054A
IC103	AD300050	I9UJ0T600C	IC PST600C
IC199	AD300825	A3K109E015	IC S-24C08ADPA-01
IC201	AD300058	I05DC12530	IC TB1253N
IC303	BZ611034	I06DF62420	IC M62420SP
△IC401	AD300414	I03TD80410	IC LA78041
△IC501	BZ611036	I2BT06624G	IC STR-G6624
△IC502	BZ611033	I1KA97809A	IC KIA7809API
△IC503	BZ611015	I1KA97805A	IC KIA7805API
△IC504	BZ410040	0002500560	PHOTO COUPLER TLP621(D4-GR-LF2)
IC701	AD300054	I0UD013110	IC MM1311AD
IC902	AD300059	I01FF58290	IC AN5829S
△IC1001	AD300056	I0FSP52760	IC AN5276
IC1501	AD300609	I05FE90A45	IC TC90A45F
TRANSISTORS			
Q101	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q102	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q103	BZ510071	TNAAB05003	COMPOUND TRANSISTOR KRC102RTK
Q107	BZ510068	TNAAJ05003	COMPOUND TRANSISTOR KRC111RTK
Q109	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q201	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q202	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R,S
Q203	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S
Q204	AD300734	T8AA03881S	TRANSISTOR,SILICON KTC3881S-RTK
△Q402	BZ510027	TC3Q026210	TRANSISTOR,SILICON 2SC2621(D,E)-RAC
△Q405	BZ510040	TDU0024990	TRANSISTOR,SILICON 2SD2499(LB0EC1)
Q406	BZ510049	TPYJD05001	COMPOUND TRANSISTOR DTA144EKAT146
△Q501	BZ510070	TCAT032034	TRANSISTOR,SILICON KTC3203_Y-AT
Q504	BZ510069	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
△Q507	BZ510069	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
△Q508	AD300611	TAAT01273Y	TRANSISTOR,SILICON KTA1273_Y

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.	Description
TRANSISTORS			
Q509	BZ510071	TNAAB05003	COMPOUND TRANSISTOR
△Q510	BZ510031	TD3T007340	TRANSISTOR,SILICON
△Q512	BZ510004	TA3T016240	TRANSISTOR,SILICON
Q601	BZ510020	TNYJB05001	COMPOUND TRANSISTOR
Q603	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q604	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q701	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q704	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q705	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q709	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON
△Q801	BZ510027	TC3Q026210	TRANSISTOR,SILICON
△Q802	BZ510027	TC3Q026210	TRANSISTOR,SILICON
△Q803	BZ510027	TC3Q026210	TRANSISTOR,SILICON
△Q810	AD300442	TCYT1740S0	TRANSISTOR,SILICON
△Q811	AD300442	TCYT1740S0	TRANSISTOR,SILICON
△Q812	AD300442	TCYT1740S0	TRANSISTOR,SILICON
Q1001	BZ510068	TNAAJ05003	COMPOUND TRANSISTOR
Q1501	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q1502	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON
Q1503	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
Q1504	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON
COILS & TRANSFORMERS			
L002	BZ310002	021673101K	COIL
L101	AD300121	021LA62R7K	COIL
L202	BZ310101	0216A61R2K	COIL
L203	BZ310101	0216A61R2K	COIL
L204	BZ310043	021LA6150K	COIL
L205	BZ310003	021673470K	COIL
L301	BZ310029	021LA6470K	COIL
L302	BZ310058	021LA6220K	COIL
△L402	BZ310063	022100027A	COIL,LINEARITY
△L501	AD300402	029X000098	COIL,LINE FILTER
△L503	AD300735	028R270008	COIL,DEGAUSS
L601	BZ310003	021673470K	COIL
L602	BZ310002	021673101K	COIL
L603	BZ310040	02167F470J	COIL
L604	BZ310040	02167F470J	COIL
L701	BZ310005	02167D101K	COIL
L703	BZ310040	02167F470J	COIL
L802	AD300123	021673151K	COIL
L803	AD300123	021673151K	COIL
L804	AD300123	021673151K	COIL
L901	BZ310058	021LA6220K	COIL
L1501	BZ310052	021LA6100K	COIL
L1502	BZ310043	021LA6150K	COIL
L1503	AD300614	021673821K	COIL
L1506	BZ310058	021LA6220K	COIL
T401	AD300736	045013002J	TRANS,HORIZONTAL DRIVE
△T501	AD300737	048140064S	TRANSFORMER,SWITCHING
JACKS			
J203	BZ614203	060Q431018	RCA JACK
J701	BZ614203	060Q431018	RCA JACK
J702	AD300108	063Q700002	JACK
J703	BZ614203	060Q431018	RCA JACK
J704	AD300738	060Q411017	RCA JACK
J705	AD300739	060Q401048	RCA JACK
J706	AD300740	060Q401049	RCA JACK
J707	AD300741	060Q421018	RCA JACK
△J801	BZ614057	066C130015	SOCKET,CATHODE RAY TUBE
SWITCHES			
SW101	BZ612001	0504201T31	SWITCH,TACT
SW102	BZ612001	0504201T31	SWITCH,TACT
SW103	BZ612001	0504201T31	SWITCH,TACT
SW104	BZ612001	0504201T31	SWITCH,TACT
SW105	BZ612001	0504201T31	SWITCH,TACT
VARIABLE RESISTORS			
VR401	BZ210194	V1263H3BT7	VOLUME,SEMI FIXED
VR502	BZ210067	V116314BTC	VOLUME,SEMI FIXED
P.C.BOARD ASSEMBLIES			
PCB010	AD300826	A3K109E010K	PCB ASS'Y
PCB110	AD300743	A3K106E110K	PCB ASS'Y
PCB170	AD300827	A3K109E170K	PCB ASS'Y
PCB330	AD300745	A3K106E330K	PCB ASS'Y
MISCELLANEOUS			
B502	BZ310122	024HT03563	CORE,BEADS
B504	BZ310121	024HT03553	CORE,BEADS
B505	BZ310015	024AT03482	CORE,BEADS

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	USA-TOSHIBA	Reference No.	Description
MISCELLANEOUS			
△CD501	AD300746	120R615901	CORD,AC BUSH
CD702	AD300747	06CU252002	CORD,CONNECTOR
CD801	AD300748	06CU2A3401	CORD,CONNECTOR
CD803	BZ614175	06CU82039A	CORD,CONNECTOR
CD805	BZ614175	06CU82039A	CORD,CONNECTOR
CF201	BZ613015	1011T4R504	FILTER,CERAMIC
CF202	BZ613022	1022T45R74	FILTER,SAW
CF203	AD300686	1012T4R519	FILTER,CERAMIC TRAP
CF204	AD300513	1012T04702	FILTER,CERAMIC TRAP
CP101	BZ614238	0697260650	CONNECTOR PCB SIDE
△CP401	AD300749	069W340018	CONNECTOR PCB SIDE
△CP501	BZ614176	069S320419	CONNECTOR PCB SIDE
△CP502	BZ614018	069W420029	CONNECTOR PCB SIDE
CP503	AD300751	069D010010	CONNECTOR PCB SIDE
CP504	AD300751	069D010010	CONNECTOR PCB SIDE
CP803	BZ614017	069W320018	CONNECTOR PCB SIDE
CP804	BZ614058	069W010010	CONNECTOR PCB SIDE
CP805	BZ614213	069S2A0629	CONNECTOR PCB SIDE
CP806	BZ614017	069W320018	CONNECTOR PCB SIDE
CD701A	AD300622	06CH243001	CORD,CONNECTOR
CP1001	AD300097	069W14T299	CONNECTOR PCB SIDE
CP1501	AD300102	069J160260	CONNECTOR PCB SIDE
CP702A	AD300752	069S250629	CONNECTOR PCB SIDE
CP702B	BZ614276	067U005049	WIRE HOLDER
CP801A	BZ614273	067U010049	WIRE HOLDER
CUS011	BZ710279	800WFAA006	CUSHION A
	BZ710001	800WF00004	CUSHION-A
EL001	BZ614044	124120301A	EYE LET
EL002	BZ614043	124116281A	EYE LET
△F501	BZ614125	081PC6R304	FUSE
△FB401	AD300753	043227008R	TRANSFORMER,FLYBACK
FH501	BZ614005	06710T0006	HOLDER,FUSE
FH502	BZ614005	06710T0006	HOLDER,FUSE
OS101	BZ614171	077Q014003	REMOTE RECEIVER
△RY501	AD300114	0560V20115	RELAY
△SP1001	AD300754	070Y435002	SPEAKER
△TH501	BZ410079	DF5EL3R0A0	DEGAUSS ELEMENT
TM101	AD300091	07660DU010	TRANSMITTER
△TU001	AD300691	0145S00052	TUNER,VHF-UHF
△V801	AD300755	098T270601	CRT W/DY
X101	AD300624	1001T8R004	CERAMIC,OSCILLATOR
X601	BZ613004	100CT3R505	CRYSTAL
			or
RESISTOR			
	RC.....	CARBON RESISTOR	
CAPACITORS			
	CC.....	CERAMIC CAPACITOR	
	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
	CP.....	POLYESTER CAPACITOR	
	CPP.....	POLYPROPYLENE CAPACITOR	
	CPL.....	PLASTIC CAPACITOR	
	CMP.....	METAL POLYESTER CAPACITOR	
	CMPL.....	METAL PLASTIC CAPACITOR	
	CMPP.....	METAL POLYPROPYLENE CAPACITOR	

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